

AMENDMENT UNDER 37 C.F.R. § 1.111
U.S. Patent Application No. 09/955,928

REMARKS

Reconsideration and allowance of the subject application are respectfully requested. Upon entry of this Amendment, claims 1-8 are pending in the application. In response to the Office Action (Paper No. 9), Applicant respectfully submits that the pending claims define patentable subject matter.

Claim 8 is objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form. By this Amendment, Applicant has rewritten claim 8, as well as claims 4 and 6, in independent form. Accordingly, claim 8 should now be allowable.

Claims 1-7 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kameyama et al. (U.S. Patent No. 5,999,243; hereafter “Kameyama”) in view of Mori et al. (U.S. Patent No. 5,805,253). Applicant respectfully submits that the claimed invention would not have been rendered obvious in view of the combined references.

Independent claim 1 recites a retardation film which exhibits $Nz = (nx - nz)/(nx - ny)$ in a range of from 0.6 to 0.9 and $(nx - ny)d$ in a range of from 200 to 350 nm; and a transparent layer provided on one of opposite surfaces of said retardation film, wherein the transparent layer has a thickness not larger than 10 μm and exhibits refractive index anisotropy of $nx \doteq ny > nz$.

Although the Examiner’s position is not entirely clear, the Examiner appears to be asserting that Kameyama (assigned to Nitto Denko Corporation) discloses all of the features of claim 1 except for the transparent film exhibiting refractive index anisotropy of $nx \doteq ny > nz$,

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which the Examiner contends is disclosed by Mori.¹ The Examiner alleges “Kameyama et al. has an optical sheet (element) which comprises a retardation film 12 (column 10, lines 1-5) and a transparent layer (oriented film 21 in Fig. 2 ... or oriented layer of liquid crystal polymer 3 in Fig. 3 ...) provided on one of opposite surfaces of said retardation film.” However, element “12” of Fig. 2 is an oriented layer rather than a retardation layer, and element “3” of Fig. 3 is a $\frac{1}{4}$ wavelength plate / retardation film rather than an oriented layer of liquid crystal polymer.² Nonetheless, as best understood by the Applicant, the Examiner appears to be taking the position the optical element (sheet) shown in Fig. 3 of Kameyama allegedly corresponds to the claimed optical sheet of the present invention, that is, the $\frac{1}{4}$ wavelength plate / retardation film 3 allegedly corresponds to the claimed retardation film, and the liquid crystal element 1 (including oriented layers 11 and 12, oriented film 21 and substrate 2 as shown in Fig. 2) allegedly corresponds to the claimed transparent layer.

With regard to Mori, the Examiner appears to be relying on Fig. 9 which shows a liquid crystal display including a liquid crystal cell PIC including a pair of substrates provided with a transparent electrode having an orientation layer thereon and a nematic liquid crystal sealed therebetween, a pair of polarizing plates A and B arranged on the both sides of the cell, optical compensatory sheets OC1 and OC2 between the liquid crystal cell and the polarizing sheet, and a back light BL. The Examiner cites column 23, lines 10-35 of Mori allegedly disclosing the

¹ Office Action at page 5, first full paragraph.

² Element “1” is a liquid crystal.

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optical compensatory sheet B has refractive indices of $nx = 1.540$, $ny = 1.540$ and $nz = 1.536$ (i.e., $nx \approx ny > nz$).

In support of the rejection (paragraph bridging pages 7 and 8), the Examiner further asserts that:

Kameyama et al. teaches that the optical [sheet] provides improved brightness and color display balance (evenness) (column 15, lines 10-20). Therefore it would have been obvious to one of ordinary skill in the art to have used the optical sheet of Kameyama et al. as part of the pair of polarizers in the liquid [crystal] display of Mori et al. in order to obtain a liquid crystal display device with the desired color display balance.³

Applicant respectfully submits that the Examiner has not established a *prima facie* case of obviousness under 35 U.S.C. § 103. “To support the conclusion that the claimed invention is directed to obvious subject matter, either references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the reference.” *Ex parte Clapp* 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

As best understood by the Applicant, it appears that the Examiner is alleging that it would have been obvious to add Kameyama’s optical sheet to the liquid crystal display illustrated in Fig. 9 of Mori. However, the Examiner’s proposed modification of Mori based on Kameyama

³ The Examiner has reversed the combination of the references (i.e., modifying Mori based on Kameyama rather than modifying Kameyama based on Mori) as compared to the statement of the rejection and the discussion of the alleged teachings of references. That is, the Examiner maintains that

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is unclear since the Examiner does not indicate how the “optical sheet” of Kameyama be would “used … as part of the pair of polarizers in the liquid crystal display of Mori” (i.e., where the optical sheet of Kameyama would be added to the pair of polarizers in the liquid crystal display of Mori).

If the Examiner is alleging it would have been obvious to add Kameyama’s optical sheet to one or both of the polarizers shown in Fig. 9 of Mori, the resulting liquid crystal display device would not have a transparent layer which has both a thickness not larger than 10 μm and exhibits refractive index anisotropy of $\text{nx} \neq \text{ny} > \text{nz}$. Similarly, if the Examiner is alleging it would have been obvious to replace one of the optical compensatory sheets OC1 or OC2 of Mori with the optical sheet of Kameyama, then the resulting liquid crystal display device would not include a transparent layer which exhibits refractive index anisotropy of $\text{nx} \neq \text{ny} > \text{nz}$, as required by the claims. Accordingly, Applicant respectfully submits that the even if one of ordinary skill in the art would have been motivated to modify Mori based on the teachings of Kameyama, the resulting device would not include all of the features of the claimed invention.

As discussed above, Kameyama discloses (i) a liquid crystal element (Fig. 2) comprising a laminate of a substrate 2, an oriented film 21, and an oriented layer 1 including two oriented layers 11 and 12, and (ii) an optical element (Fig. 3) comprising a laminate of a liquid crystal element 1 and a quarter-wave plate (retardation film) 3 having a retardation (Re) of 100 to 175 nm.

Mori discloses an optical compensatory sheet comprising a polycarbonate film and an optically anisotropic layer. Mori teaches that the polycarbonate film has a thickness of 60 μm and refractive indices of $\text{nx} = 1.540$, $\text{ny} = 1.540$, $\text{nz} = 1.536$ such that the Nz coefficient is made infinite.

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The optically anisotropic layer has a thickness of 5.0 μm and is a discotic liquid crystal layer which has inclined planes and shows zero retardation (Re) in the rubbing direction (i.e., $(\text{nx}-\text{ny})d$ is zero).

See column 23, line 8 to column 24, line 4.

On the other hand, the claimed invention requires an optical sheet having a retardation film with Nz coefficient from 0.6 to 0.9, $(\text{nx}-\text{ny})d$ from 200 to 350 nm, and a transparent layer with $\text{nx} \approx \text{ny} > \text{nz}$ and a thickness not larger than 10 μm . Thus, Kameyama's laminate (Fig. 3) of the oriented layer 1 and the retardation film 3 differ from the claimed retardation film and transparent layer of claim 1. Further, Mori teaches $\text{nx} = \text{ny} = 1.540$ and $\text{nz} = 1.536$ such that the Nz coefficient is made infinite, and $(\text{nx}-\text{ny})d$ is made zero.

Consequently, although Kameyama and Mori appear to disclose a film similar to the optical sheet according to the invention from the aspect of the laminate comprising a retardation film and a liquid crystal transparent layer, Applicant respectfully submits that it is quite clear the retardation films and transparent layers used in the cited references are different from those in the optical sheet according to the claimed invention. Further, as discussed above, even if the cited references are combined as proposed by the Examiner, the resulting device would not include all of the features of the claimed invention.

In view of the above, Applicant respectfully submits that claims 1-7 should be allowable over Kameyama and Mori.

Accordingly, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner

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feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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